

**State of Wisconsin/Department of Transportation**  
**RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: Jun 30, 2004**

<b>Program: SPR-0010(36) FFY99</b>		<b>Part: II Research and Development</b>	
<b>Project Title: Field Validation of Wisconsin Modified Binder Selection Guidelines</b>		<b>Project ID:</b> 0092-03-13	
<b>Administrative Contact:</b> Nina McLawhorn		<b>Sponsor:</b>	
<b>WisDOT Technical Contact:</b> Len Makowski		<b>Approved Starting Date:</b> Jan 31, 2003	
<b>Approved by COR/Steering Committee:</b> \$125,006.00		<b>Approved Ending Date:</b> Jul 31, 2006	
<b>Project Investigator (agency &amp; contact):</b> Hussain Bahia: UW-Madison			

**Description:** The study will be conducted over 36 months, and be completed in 5 phases:

Task 1: Select Field Section and Define Grades to be Compared

Task 2: Collect Samples and Conduct Testing

Task 3: Monitor Performance of Sections

Task 4: Database Development

Task 5: Reporting

<b>Total Study Budget</b>	<b>Current FFY Budget</b>	<b>Expenditures for Current Quarter</b>	<b>Total Expenditures to Date</b>	<b>Percent Complete</b>
<b>\$125,006.00</b>	<b>\$31,251.50</b>	\$13,371.00	<b>\$22,555.53</b>	<b>29 (%)</b>

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**Progress This Quarter:**

(Includes project committee mtgs, work plan status, contract status, significant progress, etc.)

Meetings

One meeting was carried out with Ms. Judie Ryan from WisDOT Materials Lab for identifying projects where binders of PG 76-34 and 70-34 could be used. These binders are not used very often in Wisconsin but are critical for verifying results. It was decided to look for future projects where test sections could be constructed with these binders. Some tentative projects were proposed but the proposition has not been materialized yet.

Collection of Samples

One of the need binder grades could be collected during this quarter. A PG64-34 was collected from a project in district 7 (USH 51).

Gathering information about Selected Projects

One meeting was held with Tom Brokaw and James Bongard of the DOT. The purpose of this was to look for more information about the selected projects in the DOT database. The information gathered included specific location and pavement description. This information is essential for obtaining the field performance information and data analysis. Table 1 presents the main information for the selected projects.

Database Development

The database work was started using Microsoft Access. The project and sample information was introduced in the database for the selected projects. The testing information was also introduced in the database as the testing results were obtained.

**Table 1: General Information About the Selected Projects**

DOT Project #	Highway ID	Description	County	District	Base	Pavement
	STH 17	STH-17 Rhinelander	Oneida	7		
10010377	I 90	Janessville - Illinois Rd	Rock	1		
10200174	I 94	Hudson - Menomonie Rd	Croix	6		HMA <sup>4</sup>
10320576	I 94	Milwaukee Rd, East West Freeway	Kenosha	2	CA <sup>1</sup>	HMA
10660171	STH 26 - CTH Q	Madison Waukesha Rd	Jefferson	1		
10800072	USH 12	Wihtwater Bypass	Walworth	2	CA	HMA
10901470	I 894	Airport Freeway	Milwaukee	2	RC <sup>2</sup>	HMA
11301271	USH 41	De Pere - Green Bay, Lombardy Ave - I 43, STH 54-STH 29 AU	Brown	3	PCC <sup>3</sup>	HMA
11302360	I 43	Milwaukee - Green Bay Rd	Brown	3	PCC	HMA
11701370	USH 51	STH 77 - USH 2, City Hurley	Iron	7	RC	HMA
11771070	USH 51	South County Line - CTH M	Vilas	7		HMA
11900080	USH 53	Eu Claire - Chippewa Falls Rd	Chippewa	6		
11900280	USH 53	Hastings Way, Eu Clare City	Eu Claire	6		
15500081	STH 35, 64	Houlton - New Richmond Rd, 150th Ave	Croix	6		
15951070	USH 8, STH 47	Wisconsin River Bridge - CTH C, USH 8 - Hanson Lake Rd	Oneida	7	RC	HMA
16610771	USH 18, STH 35	Prairie Du Chien - Bridgeport	Crawford	5		
21400672	STH 181	Wauwatosa Rd, Pioneer Rd Inter, Freistadt Rd & Highland Rd	Ozaukee	2	CA	HMA
21750570	Local St	N 124th St., W Burleigh St - W Capitol Dr	Milwaukee	2	CA, RC	HMA
	STH 95	Arcadia	Trempealeau	5		
31200670	STH 67	S Lincoln St, I 43 - Walworth St	Walworth	2	CA	HMA
	STH 95	Arcadia Intersection	Trempealeau	5		
40150671	STH 57	Milwaukee - Green Bay Rd	Ozaukee	2		
41001071	USH 151	Calumet Ave, City Mintowoc S 41st St- 26th St	Manitowoc	3	CA	HMA
45170071	Local St	Libal St, Vil Allouez, Lebrun - Vandehei & Kalb - N Vil Limit	Brown	3	CA	HMA
53000373	USH 12	Sauk City - Middleton Rd	Dane	1	CA	HMA
59910234	Local St	N Kinney Coulee Road	La Crosse	5		
59920304	Local St	Old Sauk Road, Madison	Dane	1		HMA
59920414	CTH PD	McKee Road, Madison	Dane	1		HMA
61300075	Local St	Silver Lake Dr, Portage	Columbia	1	CA	HMA
6173210						
65900070	STH 110	Pine, Mill & Main St.	Waupaca	4		
69990070	USH 10	Neillsville, Marshfield Rd	Clark	6		SMA <sup>5</sup>
70300670	STH 17	Pollyanna Ln	Oneida	7		HMA
90400970						
91400770	STH 64	Charlotte Ct, Clover Rd	Langlade	7		HMA

Notes: <sup>1</sup> CA = crushed aggregate base

<sup>2</sup> RC = rubbilized concrete base

<sup>3</sup> PCC = Portland cement concrete base (asphalt overlay)

<sup>4</sup> HMA = hot mixed asphalt

<sup>5</sup> SMA = stone matrix asphalt

- Blank fields mean that the information is not available yet

### Lab Work

The lab work continued with focus on the binder rutting testing. The test carried out is the viscous component of the creep stiffness  $G_v$ . For each binder, a total of 4 samples were tested: 2 for the original binder and 2 for the RTFO aged binder. The conditions of testing were 58°C and 25 [Pa], which were defined in a previous research study (DOT project ID 0092-01-01). The results are averaged and the  $G_v$  values for the original and RTFO binder are saved. Table 2 shows the testing results for 5 of the binders.

**Table 2: Testing Results for Rutting**

<b>Project</b>	<b>PG Grade</b>	<b><math>G_v</math> Original Pa</b>	<b><math>G_v</math> RTFO Pa</b>
STH-17, Rhinelander	64-28	140	380
I 94, Hudson - Menomonie Rd	70-28	2400	9100
STH 95, Arcadia	58-28	130	1500
STH 95, Arcadia (Intersection)	64-28	460	6700
USH 51, City Hurley	64-34	1000	6300

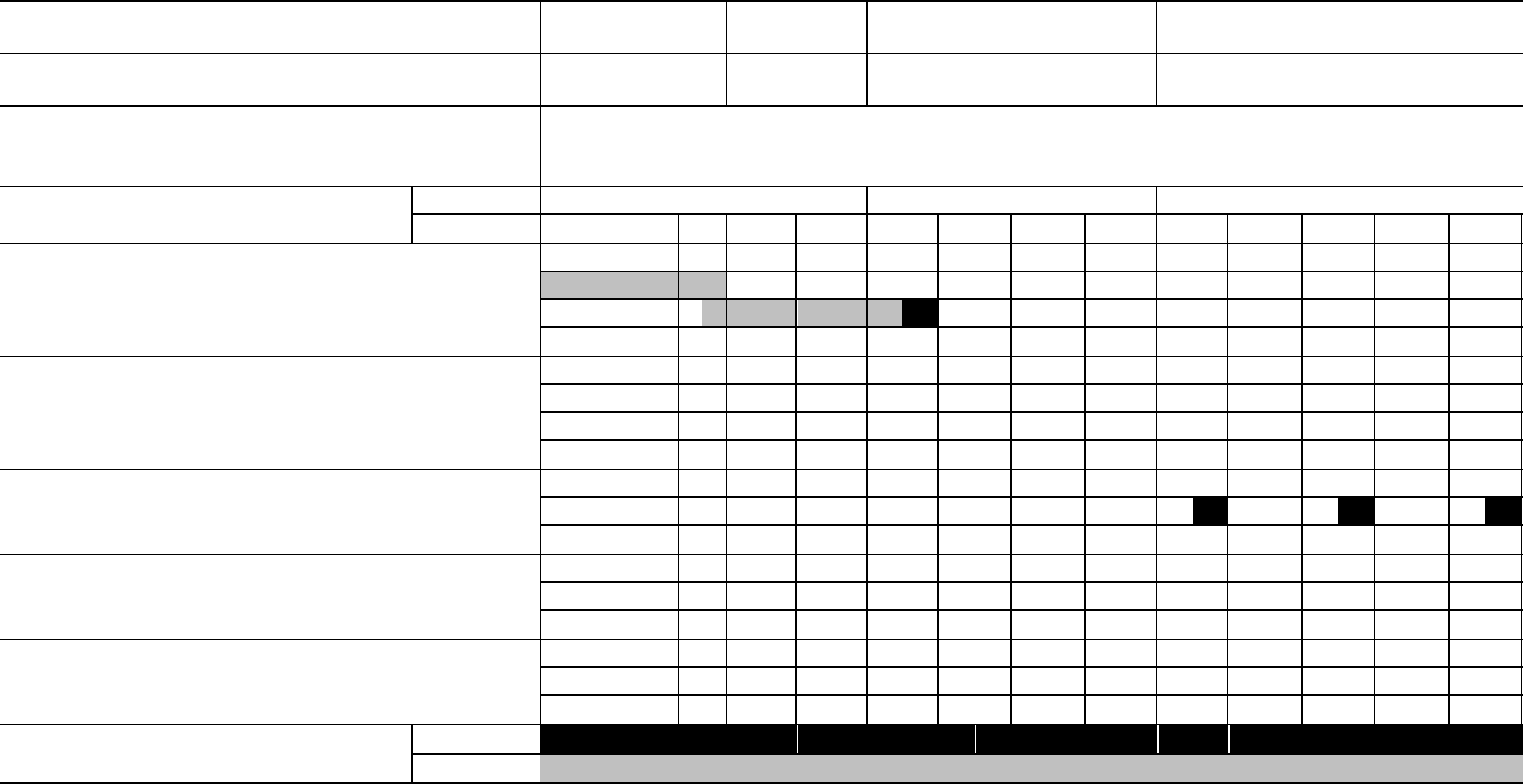
### **Work Next Quarter:**

In the next quarter, the main focus of the work will be on continuing the lab testing for rutting and the rest of the parameters (fatigue, low temperature, mixing and compaction). Also, performance data from the selected projects will be collected. The main focus will be the low temperature performance, which is a distress that can be found early in the service life of pavements.

### **Circumstances affecting progress/budget:**

The main problem in the progress of this quarter was the difficulty to find some specific binder grades. The proposed solution was to implement test sections within some projects where the PG76-34 and PG70-34 could be used. The proposition has not being brought to practice yet.

Gantt Chart:



Note: Gantt chart shown in State Fiscal Year Quarters